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OPPORTUNITIES FOR GROWTH: Research and Development Activities in the Utah Economy – 1984

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Total spending for research and development (R&D) activities in the State of Utah in 1984 amounted to slightly more than $670 million, and may have been as much as $900 million. Although advances in genetic and biomedical research have resulted in a majority share of national and international recognition for the state, Utah actually has a broad base of R&D activities that includes the areas of defense and space research, computer hardware and software development, electronic device and equipment development, and environmental research. Indeed, R&D is becoming an increasingly important part of the state's economy in terms of employment and expenditures, while at the same time keeping Utah at the forefront of technological advances.

While previous studies done by the Bureau of Economic and Business Research have addressed the presence of R&D efforts in the state, an in-depth assessment of these capabilities has not been undertaken.[1] Consequently, the task of assessing the state's R&D capabilities in the physical, medical, engineering and environmental sciences was begun with the objective of addressing two issues which are especially pertinent to the state's economic growth. First, R&D activities and programs offer opportunities for growth by providing new jobs and technological innovations. Subsequently, it is advantageous to identify and nurture those activities which have the highest potential for growth. Second, as the access to research universities, centers and firms becomes an augmenting factor in the plant location decisions of numerous companies, an assessment of research conglomerations in Utah serves to enhance the state as a potential site for companies that may be considering a move. As a result, this article summarizes the findings of a comprehensive study completed by the Bureau of Economic and Business Research in the early part of 1986 which identifies and catalogues the R&D activities in the Utah economy.[2]

The Composite Sample

The process of assessing the research and development efforts in Utah was a formidable task, due largely to the fact that "R&D" is not readily definable. The lack of a conclusive and widely accepted definition, combined with the absence of a central data source and a general reluctance on the part of a few university agencies to provide accurate information, contributed significantly to the overall difficulties. However, based on the survey results, substantial amounts are being spent in Utah for R&D activities within private industry, universities, and at federal agencies located throughout the state, especially with respect to defense programs.

The R&D capabilities, activities and student enrollments of three major universities in the state were assessed and included the University of Utah (U of U), Utah State University (USU), and Brigham Young University (BYU). The funding for research activities at other Utah colleges is very modest and for that reason was not included.

The R&D efforts in the state's public sector (excluding universities) are also significant, specifically in the area of defense. Other federal agencies in Utah work closely with the major universities, primarily in the areas of agriculture and natural resource conservation.

While the importance of research in the social sciences is unquestionable, it was beyond the scope of this particular survey to identify such research activities.

Definition of "Research and Development"

The term "research and development," as mentioned, was a difficult concept to define. The term "research" encompasses such components as basic, applied, and clinical research; while "development" is yet another discipline involving application and experimentation. In order to establish common ground, the definition developed and used by the National Science Foundation was ultimately adopted. Another component essential in describing the research efforts in Utah was the identification of the differences between internally generated (company-sponsored) research and contract research.

The term contract research in this context, denotes research performed by a company for an entity other than itself, and in some cases is the sole source of the company's sales and revenues.

The term internally-generated research in this context, designates the research a company sponsors and undertakes for its own purposes independent of outside clients or contracts.

R&D Expenditures and Sources

Between $670 and $900 million were spent on R&D activities in Utah during 1984. This amount includes R&D expenditures by firms in private industry, agencies of the federal government which are located in Utah, and at the state's three research universities. While approximately $672 million can be verified through records maintained at universities or from annual company reports, an estimated additional $200 million were spent by a multitude of small companies that do not publish verifiable financial data.

Close to 80 percent of the money spent for R&D in Utah during 1984 originated from federal agencies, the most prominent of which is the Department of Defense. Other agencies that supply significant amounts of money for R&D are the National Aeronautics and Space Administration, National Science Foundation, National Institutes of Health, and Department of Health and Human Services.[3] While strong federal support for research has been beneficial to Utah thus far, it follows that the continued existence of a solid research base within the state is directly related to the amounts these federal agencies are either willing or able to supply.

A Profile of Research and Development in Private Industry

Of more than 100 firms contacted, 88 firms indicated that R&D played an important role in their everyday business activities. Data was obtained through telephone and personal interviews. Based on these interviews, the following information was compiled.

* *Of these 88 firms, 91 percent fall into five broad research areas.*
* *R&D expenditures in the private sector exceeded $548 million in 1984.*
* *R&D expenditures accounted for relatively large portions of the firms' operating budgets.*
* *Total employment in these 88 firms exceeded 23,000 people.*
* *Of these 23,000 employees, 14 percent or 2,318 people, were classified as R&D personnel.*

Of these 88 firms, 91 percent fall into five broad research categories. With few exceptions, these 88 firms can be segregated into the five following research areas:

Biomedical (26 firms)
Computer Hardware and Software(23 firms)
Defense (4 firms)
Electronic Device and Equipment (8 firms)

Environmental – including genetic work with plants (19 firms)

Eight firms are involved in activities which are so specialized that it is impossible to categorize their research efforts in the above specified divisions. Activities underway at these firms include ceramics and materials research, telecommunications and satellite communications, and composite structure research.

Although Utah has a broad research base, much of the recognition surrounding the state's research achievements have focused on advances in biomedical or bioengineering. In fact, Utah has one of the largest aggregations of biomedical research firms in the country, thus prompting its nickname "Bionic Valley."

R&D expenditures in the private sector exceeded $548 million in 1984. R&D expenditures in private industry accounted for slightly more than 82 percent of aggregate R&D expenditures within the state. With only 67 percent of the firms supplying this information, it is clearly a conservative figure (Figures 1 and 2).

Figure 2
Research and Development Expenditures in Utah
All Sources - 1984

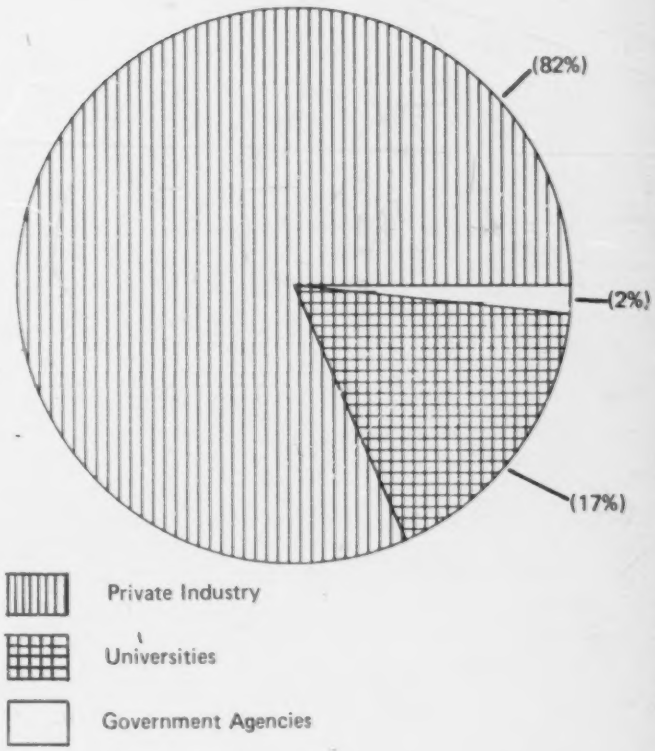
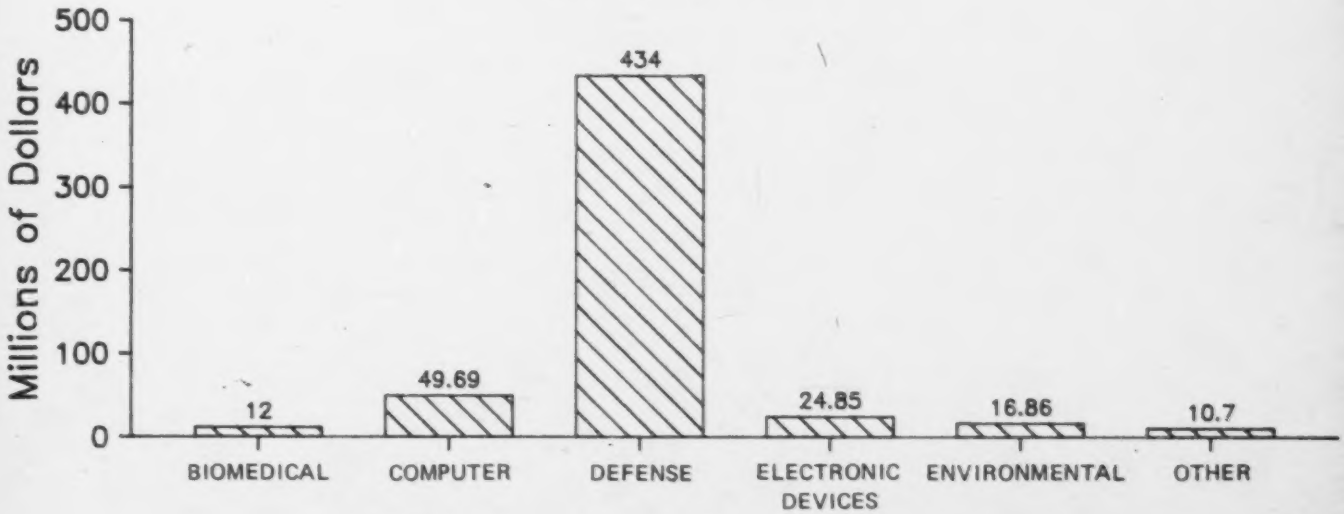


Figure 1
Research and Development Expenditures
Private Industry - 1984



Sources of R&D funding include the entire range of state and federal agencies including the Department of Defense, Department of Energy, and the National Aeronautics and Space Administration.

Nationwide, defense programs accounted for 70 percent of all programs included in the 1985 federal R&D budget, a 26 percent increase over 1984 levels. Reflecting this trend, the two largest defense contractors in the state, Hercules Corporation and Morton-Thiokol Corporation, spent about $400 million on R&D during 1984, accounting for about percent of all R&D expenditures in the state during that period.

R&D expenditures accounted for relatively large portions of the firms' operating budgets. With few exceptions, these 88 firms spent relatively large portions (more than 15 percent) of their operating budgets for R&D activities. Indeed, 34 percent of the firms indicated that such expenditures exceeded more than one-half of their respective operating budgets. Generally, these firms were either in the initial start-up phase, or performed a great deal of contract research.

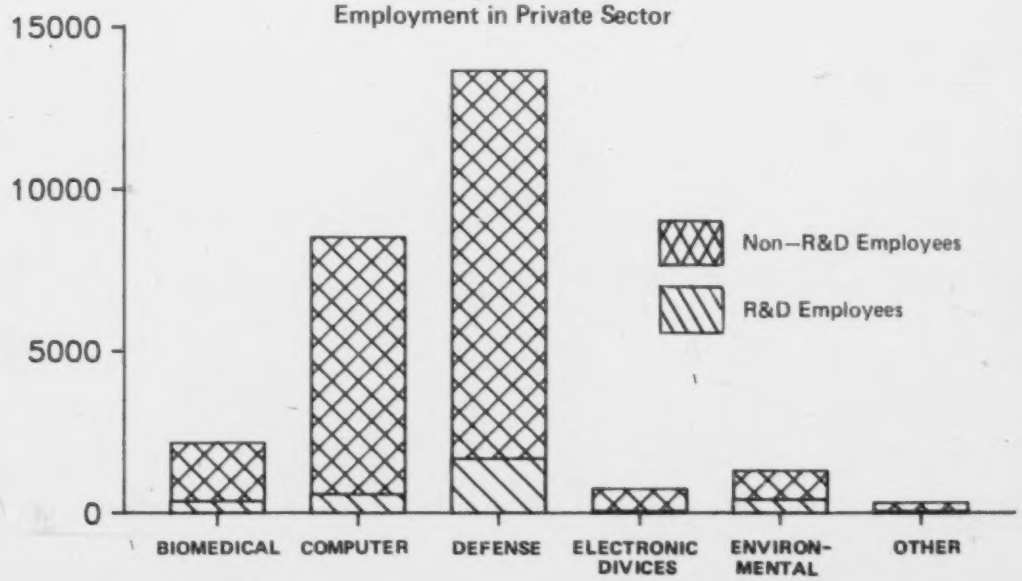
Categorically, firms in the environmental and defense sectors spent the largest percentages of their operating budgets on R&D; these firms are primarily involved in contract research.

Total employment in these 88 firms exceeded 23,000 people. Actual employment within the 88 firms surveyed was 23,491 during 1984. For the most part, these firms are relatively small; 78 percent had less than 100 employees and 55 percent less than 25 employees. Firms engaged in environmental research tended to have employment levels smaller than firms in other categories. Three companies – Morton-Thiokol, Hercules Corporation, and Sperry Corporation (all divisions of larger companies located outside the state) – supplied about 60 percent of the total employment figure.

Of these 23,000 employees, 14 percent or 3,218 people, were classified as R&D personnel. The designation of "R&D employee" was determined solely by representatives of each firm and tends to reflect those employees not overly involved with administrative, clerical, or manufacturing activities. Typically, small, fledgling companies were inclined to have a greater percentage of their employees devoted to R&D efforts than did larger firms. Those companies with more than 100 employees had a substantial number of their personnel involved in routine manufacturing tasks and as a whole, spent less of their budgets on R&D.

On the average, firms engaged in environmental research classified a large percentage of their employees as R&D personnel (57%), while firms active in computer development specified that only a small portion of their employees performed such activities, about 7% (Figure 3).

Figure 3
Employment in Private Sector



R&D at the State's Universities and Colleges

Universities are traditionally cited as important locational factors in high technology growth since they train new personnel and provide academic experts whose research can create or interact with commercial technology. Because of the essential role that universities play in regional development, Utah is fortunate to have three top quality research universities – the University of Utah, Utah State University, and Brigham Young University. Although Utah has six four-year degree-granting institutions of higher education, these three universities account for the largest number of students, research programs and funds, and faculty members.

A strong commitment to research and development programs, especially in the science and engineering fields is an essential factor in helping the state build strong foundations for growth. To this end, both the University of Utah and Utah State University have well-established research programs in one or more of the fields of Science, Engineering, Medicine, Mining and Minerals, and Agriculture. Brigham Young University is making enormous strides toward establishing R&D programs in Science and Engineering that will enhance the on-going Combustion Research and Computer Research Programs.

The healthy ties between these universities and private industry have resulted in strong university-industry linkages providing added benefits to students and faculty members alike.

Based on information provided by the administrative offices of these three universities, and from data compiled by the National Science Foundation (NSF), the following information was obtained.

- *R&D expenditures at U of U, USU, and BYU exceeded $113 million in 1984.*
- *In 1984, 67 percent of the R&D funds received by these three universities and used in the Science/Engineering fields originated from federal agencies.*
- *During 1983, U of U, USU, and BYU ranked in the top 35 percent of 563 universities and colleges in the nation in terms of total R&D expenditures in the Science/Engineering fields.*
- *Approximate enrollment at U of U, USU, and BYU during the academic year 1984-85 was 64,085.*
- *Encouragement of academic capitalism at these institutions has spawned over 50 companies.*

R&D expenditures at U of U, USU, and BYU exceeded $113 million in 1984. This $113 million was a 21 percent increase over the 1983 expenditure level of $94 million and accounted for approximately 15 percent of all R&D expenditures state-wide. Based on information provided by the administrative offices at U of U, USU, and BYU, funds received for R&D during 1985 increased approximately 17 percent over 1984 levels, amounting to about $133 million (Figures 4 and 5).

Figure 4
Research and Development Expenditures
Universities - FY 1984

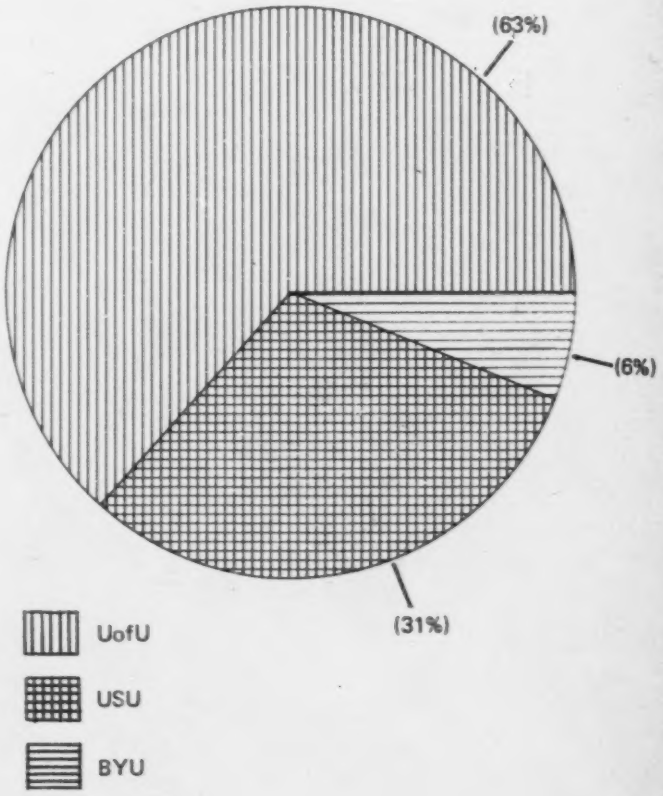


Figure 5
Funds Received for Research at Utah's Universities
Fiscal Years 1982-1985
(thousands of dollars)

Institution	1982	1983	1984	1985
University of Utah	$57,998	$57,922	$71,620	$82,669
Utah State University	35,975	30,098	34,471	40,654
Brigham Young University	5,726	5,754	6,983	8,855

Source: Jan E. Crispin and R. Thayne Robson, *Research and Development Activities in the Utah Economy – 1984*, Bureau of Economic and Business Research, University of Utah, February 1986.

As a corollary to these increases, information published by the National Science Foundation indicates that by 1983, universities and colleges in Utah experienced an aggregate increase in R&D expenditures in the Science/Engineering fields of about 119 percent over 1975 levels. This increase places Utah fourth out of the eight surrounding states in terms of percentage increases in R&D expenditures for Science/Engineering during the period 1975 - 1983.[4]

In 1984, 68 percent of the R&D funds received by these three universities and used in the Science/Engineering fields originated from federal agencies. The major suppliers of these funds are the Department of Health and Human Services, Department of Defense and the National Science Foundation. The University of Utah alone received approximately $4 million in prime contract awards in 1984, placing the institution in the upper 47 percent of the top 500 contractors receiving funds from this agency.[5] Additionally, about 10 percent of the Science/Engineering research and development funds received by universities in Utah were supplied by state or local government, 13 percent came from institutional sources, 5 percent originated from private industry, and the remaining 4 percent were provided by sources other than those stated.[6]

This traditional reliance on federal research funds may have a negative effect on these universities in the future as federal R&D funding to universities and colleges is expected to decline in current dollars by 1 percent between 1985 and 1986. For example, proposed Department of Defense support is expected to grow in real terms only 2 percent during 1985 and 1986 which may adversely affect research at the University of Utah.

During 1983, U of U, USU, and BYU ranked in the top 35 percent of the 563 universities and colleges in the nation in terms of total R&D expenditures in the Science/Engineering fields. Information provided by NSF indicates that in 1983 the University of Utah ranked 52nd out of 563 universities and colleges in the country in terms of overall R&D expenditures in the fields of Science/Engineering. Utah State University ranked 74th, and Brigham Young University ranked 185th.

Comparisons with previous year data show that the U of U retained its 1982 position, USU dropped one position (73rd in 1982), and BYU gained ten positions (195th in 1982). The first 60 institutions in the survey accounted for more than half of the $7.7 billion in R&D expenditures in the United States in Science/Engineering during 1983.[7]

Approximate enrollment at U of U, USU, and BYU for 1984-85 was 64,085 students. Total student enrollment at BYU, USU, and the U of U during autumn 1984 was approximately 64,085. Of this total, 27 percent or 17,524 students had either declared an undergraduate major in, or were undertaking graduate work in the areas of Science, Engineering, Agriculture and Natural Resources, Mining and Minerals, or Medicine and Pharmacy.

Of the 13,416 degrees conferred by institutions of higher education in Utah during 1984, 87 percent were granted by the U of U, USU and BYU. Of the 2,518 degrees granted in the aforementioned areas, 2,288 or 91 percent were granted by these universities.

While little regional comparative data are available, with regard to undergraduate engineering degrees conferred, universities in Utah are keeping pace with the nation. Nationally, engineering undergraduate degrees conferred as a percentage of total undergraduate degrees fluctuates around 6 percent; the same percentage figure in Utah during 1984 was approximately 6.1 percent.

Encouragement of academic capitalism at these institutions has spawned over 50 companies. Over the past 20 years, research initiated at the U of U, USU, and BYU has produced over 50 "spin-off" companies. For the most part, these companies can be classified as high technology firms, and have remained in the state, contributing to economic growth.

Another impressive result of academic capitalism is the large number of patents produced by universities in the state. Utah ranks tenth nationwide in terms of university patents granted according to each state from 1963 to 1983. Records maintained at patent offices at USU and the U of U indicate that the number of patents granted to their respective universities totaled slightly more than 200; another 50 patents are still pending approval.

Additionally, the University of Utah Research Park, administered by the University of Utah, contains 45 companies – many of which are the result of University-initiated research. Utah State University and Brigham Young University are also actively developing research parks which have close associations with their respective research efforts.

R&D in the Public Sector

Although Utah lacks large governmental research laboratories, the state does have federal agencies with substantive research budgets conducting business within its boundaries. These R&D activities and expenditures are primarily centered in three agencies of the federal government – the U.S. Department of the Interior, Bureau of Mines; U.S. Department of Agriculture, Forest Service Intermountain Research Station; and the U.S. Army Dugway Proving Ground.

Both the Bureau of Mines and the intermountain Research Station received federal appropriations for research and administrative overhead costs totaling more than $8 million. The amounts used solely for research were about $6 million. Information regarding the research budget for Dugway Proving Ground, as estimated by a spokesman for the agency, was between $6 and $8 million during 1984. Administrative appropriations received by Dugway Proving Ground were substantially higher. An estimation of total R&D expenditures in these three federal agencies was about $11 million for 1984.

Approximately 1,400 people are employed by these agencies. Information regarding the number of R&D employees working at Dugway Proving Ground is unavailable, but at least 50 percent, or 100 employees at the Bureau of Mines and at the Intermountain Research Station, are designated as research scientists or research personnel.

Conclusion

Utah has a large and growing "research and development" economy consisting of universities, private firms, and government agencies. Together these activities accounted for $670 million in spending and employment of over 23,000. These activities are important not only in generating income and employment for those who currently work in these activities; but they are also important in attracting firms that want to be associated with or near to large concentrations of research work at universities, or in firms or agencies whose special interests are relevant to the success of the firm.

Research universities in Utah have been the key to much of the growth in R&D activity, especially the three major research universities; namely the University of Utah in Salt Lake City, Utah State University in Logan, and Brigham Young University in Provo. Both the University of Utah and Utah State University have been designated by the National Science Foundation as research universities and are ranked in the top 75 such universities in the United States.

Besides considering their own research agendas, these universities offer specialized faculties and facilities to private industry on a contract basis. Specialized pieces of equipment that include exotic lasers, one-of-a-kind environmental items, and high capacity computer facilities are available for a fee to private industry.

In addition, the universities and colleges in Utah continuously offer graduate-level technical and research programs which have been rated as some of the finest in the country, especially in the areas of Mathematics and Chemistry. Consequently, Utah's universities and colleges provide a pool of highly educated employees in the Science and Engineering fields.

Commitments to quality research efforts by the School of Medicine and the College of Engineering at the University of Utah in the area of Biomedical Engineering, and the current concentration of bioengineering firms in the state, make Utah a good location for new biomedical enterprises. The state has gained international recognition for the research endeavors in this area, and has one of the largest conglomerations of bioengineering firms in the country, earning it the nickname "Bionic Valley."

The University of Utah Research Park (the fourth largest in the country in terms of employment and tenants), and the new Utah State Research and Technology Park provide favorable environments for fledgling R&D firms. Located near the university's campus, new firms can take advantage of trained personnel and supportive research services provided by these parks.

Recognizing the active role that state and local governments must play in encouraging and fostering R&D activities, the Department of Economic and Community Development has initiated the "Centers of Excellence" program funded at $2.5 million. The program will provide money for the development of Centers that encourage research and that are associated with a university, college, or educational institute. This is just one way to keep Utah competitive in the R&D arena while encouraging and fostering university-industry linkages. This is an important issue, for while it is unrealistic to expect that industry-sponsored research will substitute for a significant part of the publicly-sponsored research, it is reasonable to work toward a level of industry support that might buffer research programs from sudden, short-term losses.

Some of Utah's larger private firms, and to a lesser extent government agencies are conducting research independent of that under way at the university level. The most notable example is the research and development of rocket propellants and rocket motors in the defense industry. These large firms are not only responsible for a large percentage of the overall R&D expenditures and employment levels but their efforts in the R&D area are keeping Utah at the forefront of new, emerging technologies.

In sum, research and development programs and activities offer opportunities for economic growth by not only providing new jobs and encouraging technological innovation, but also by promoting the state as a site for fledgling, research-dependent firms. For firms considering a move to Utah, the state can offer the most to those desiring the benefits provided by quality academic and research institutions.

Footnotes

[1]*The Medical Supply and Biomedical Research Industries*, October 1983, Bureau of Economic and Business Research, University of Utah; *A Study of Medical/Dental Supply and Biomedical Research and Engineering Potentials on Utah's Wasatch Front*, January 1972, Bureau of Economic and Business Research, University of Utah.

[2]Jan Elise Crispin and R. Thayne Robson, *Research and Development in the Utah Economy*, February 1986, Bureau of Economic and Business Research, University of Utah.

[3]*Federal Support to Universities, Colleges and Selected Nonprofit Institutions*, Fiscal Year 1983 (NSF 85-321) (Washington, D.C., 1985).

[4]*Academic Science/Engineering: R&D Funds, Fiscal Year 1983*, (Detailed Statistical Tables) (NSF 85-308), 1985. (The states used for comparative purposes are the eight mountain states and include Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming).

[5]*500 Contractors Receiving the Largest Dollar Volume of Prime Contract Awards for Research, Development, Test, and Evaluation*, Fiscal Year 1984, Department of Defense, Washington, D.C. 20420.

[6]*Academic Science/Engineering: R&D Funds, Fiscal Year 1983* (Detailed Statistical Tables) (NSF 85-308), 1985. (Institutional funds are defined as money which goes into the current fund account of the respective institution and is then reallocated by that institution at its discretion. Other, refers to sources such as private foundations and grants made by individuals.)

[7]Due to format changes made by the National Science Foundation in its dissemination of survey results, this particular statistic is not available after 1983. However, in the *Early Release of Summary Statistics on Academic Science/Engineering Resources* (1984) prepared by the National Science Foundation, the University of Utah ranked 54th, USU ranked 78th. Only the top 100 institutions were ranked; thus, BYU was not included.

Additional figures published by the National Science Foundation in its publication *Federal Support to Universities, Colleges, and Selected Nonprofit Institutions: Fiscal Year 1983* (NSF 85-321) (Washington, D.C., 1985), show that in terms of federal obligations for research and development to the largest 100 universities receiving the largest amounts by area of Science/Engineering, the University of Utah ranked 35th and Utah State University ranked 85th. Brigham Young University was not included in the survey.

Utah Business Statistics

UTAH DATA

	Dec. 1985	Dec. 1984	% Change from Year Ago	12 Month Average 1985	12 Month Average 1984	% Chg.
Total Personal Income (seasonally adjusted)(mil. of dol.)(qtly.)	17,278	16,449	5.0	17,011.0	16,045.3	6.0
New Corporations (no.)	485	452	7.3	443.8	473.3	-6.2
New Cars, Truck and Motorhome Sales (no.)	5,102	5,215	-2.2	6,516.4	6,464.1	0.8
Agriculture						
Average Prices Recorded by Farmers (dol.):						
Beef Steers and Heifers (cwt)(thous.)	57.90	61.10	-5.2	56.1	60.2	-6.8
Lambs (cwt)	55.60	59.60	-6.7	62.6	57.1	9.7
Milk Wholesale (cwt)	12.30	13.70	-10.2	12.1	12.9	-6.1
Alfalfa Hay, Baled (per ton)(mid-month price)	75.00	75.00	0.0	72.3	78.8	-8.2
Cattle Slaughtered (live weight)(thous. of lbs.)	33,300	2,916.3	14.2	33,281.7	28,724.5	15.9
Construction						
Total Construction[1] (thous. of dol.):	60,000	110,700	-45.8	131,783.3	133,925.0	-1.6
Residential	33,700	50,700	-33.5	61,025.0	64,816.7	-5.8
Nonresidential	14,500	18,300	-20.8	42,183.3	40,300.0	4.7
Public Works and Utilities	11,800	41,600	-71.6	28,566.7	26,750.0	6.8
Total Permit Construction[2](thous. of dol.):	106,757.4	58,152.4	83.6	120,128.0	125,269.0	-4.1
Residential	31,001.7	27,534.4	12.6	58,849.6	66,258.5	-11.2
Nonresidential	68,064.6	19,238.3	253.8	46,807.9	44,600.9	4.9
Additions, Alterations and Repairs	7,691.1	11,379.7	-32.4	13,970.5	14,409.6	-3.0
New Dwelling Units (no.)	583	577	1.0	1,270.7	1,567.6	-18.9
Employment						
Civilian Labor Force (thous.)	739.6r	734.6	0.7	750.2	721.0	4.0
Total Employed Persons	695.7r	687.3	1.2	703.4	674.0	4.4
Unemployed Persons	43.9r	47.3	-7.2	46.8	47.0	-0.4
Percent Total Labor Force	5.9r	6.4	-7.8	6.3	6.5	-4.3
Employees on Nonagricultural Payrolls (thous. of jobs):	638.1r	620.4	2.9	624.4	601.3	3.8
Manufacturing	93.0r	96.0	-3.1	95.7	94.1	1.7
Mining	9.0r	11.9	-24.4	9.8	12.7	-12.0
Contract Construction	34.0r	36.2	-6.1	36.2	34.9	3.7
Transportation, Communication and Utilities	37.6r	36.5	3.0	36.7	36.4	0.7
Wholesale Trade	35.8r	35.7	0.3	35.8	34.8	2.9
Retail Trade	119.3r	114.2	4.5	122.2	106.1	5.8
Finance, Insurance and Real Estate[3]	32.0r	30.4	5.3	31.1	29.8	4.5
Services[4]	136.0r	126.2	7.8	130.6	121.2	7.7
Federal Government	39.7r	37.4	6.1	39.2	37.4	4.7
State Government[4]	37.8r	35.6	6.2	35.6	35.1	1.4
Local Government[4]	64.0r	60.3	6.1	61.6	58.7	4.9
Average Weekly Hours:						
Manufacturing	41.5r	40.3	3.0	40.3	40.1	0.4
Mining	46.3r	44.9	3.1	44.7	43.2	3.3
Contract Construction	37.3r	37.2	0.3	37.8	38.2	-1.0
Wholesale Trade	32.4r	37.1	-12.7	35.3	37.0	-4.6
Retail Trade	29.1r	29.3	-0.7	38.6	29.0	-1.4
Amount of Unemployment Compensation (thous. of dol.)	8,832.6r	6,403.2	37.9	7,155.0	5,711.1	25.3
Finance						
Savings, Savings and Loan Association (mil. of dol.)	2,386.7	2,325.8	2.6	2,338.4	2,074.5	12.7
Tax Collections by the State of Utah (thous. of dol.):						
Total Tax Collections	69,099.7	58,804.0	17.5	124,155.6	115,220.0	7.8
Sales and Use Tax	3,763.1	2,784.0	35.2	45,144.7	41,292.2	9.3
Motor Fuel Tax	11,201.0	6,274.7	78.5	7,653.5	6,503.8	17.7
Individual Income Tax	32,522.0	33,517.5	-3.0	37,229.5	34,661.0	7.4
Corporation Franchise Tax	1,523.1	-1,938.0	-178.6	5,436.7	3,696.6	47.1
Production						
Net Electric Power Utilized (mil. of kwh)	1,223.2	1,138.7	7.4	na	1,143.6	na
Crude Oil to Refineries (thous. of bbls.)	na	4,273.0	na	na	4,231.9	na
Crude Oil (thous. of bbls.)	3,592.9	3,164.3	13.5	3,399.5	2,919.4	16.4
Natural Gas (mil. of cu. ft.)	21,133.0	15,377.0	37.4	17,451.3	13,330.5	30.9
Coal (thous. short tons)	1,071	1,578	-32.1	940.3	1,136.5	-17.3
Copper (thous. metric tons) (last issue containing copper data)						
Tourism/Travel						
Air Passengers (total no. on and off)(S.L. Int'l. Airport)	767,438	675,860	13.5	738,074.8	628,303.6	17.5
Highway Traffic Count Across State Lines	27,151	25,647	5.9	34,703.2	34,019.2	2.0
Transient Room Taxes (thous. of dol.)	-572.1	482.5	-218.6	401.7	385.1	4.3
Visits, State, Nat'l. Parks, Monuments (thous.)	na	227.2	na	na	914.3	na
Utilities						
Telephone Lines in Service (Mt. Bell)(residential)	469,523	458,248	2.5	461,854.9	452,259.0	2.1
Telephone Lines in Service (Mt. Bell)(nonresidential)	166,754	164,993	1.1	165,585.4	162,636.7	1.8
Electric Customers (residential)	444,658	432,583	2.8	na	426,211.8	na
Electric Customers (commercial)	43,615	41,976	3.9	na	41,524.8	na
Natural Gas Customers (residential & commercial)	432,896	419,278	3.2	422,987.1	411,670.2	2.7
Natural Gas Customers (industrial)	568	524	8.4	558.5	526.1	6.2

Utah Business Statistics

	Dec. 1985	Dec. 1984	% Change from Year Ago	12 Month Average 1985	1984	% Chg.
Davis County						
Non-Ag. Employment (thous.)	80.4[f]	50.5	59.2	53.6	49.0	9.4
Unemployment Rate	3.7[r]	4.2	-11.9	4.1	4.7	-13.0
Auth. Permit Construction (thous. of dol.)	6,047.8	4,495.7	34.5	13,942.5	11,689.3	19.3
New Dwelling Units (no.)	70	48	45.8	187.1	185.5	0.9
Postal Receipts[5] (thous. of dol.)	356.4	460.7	-22.6	316.3	330.4	-4.3
Electric Customers (residential)	33,526	31,645	5.9	33,620.9	30,826.3	9.1
Electric Customers (commercial)	2,491	2,436	2.3	2,485.3	2,335.5	6.4
Natural Gas Customers (residential)	45,314	43,187	4.9	44,172.6	42,341.4	4.3
Natural Gas Customers (industrial)	49	45	8.9	49.6	45.1	10.0
Telephone Lines in Service (Mt. Bell)(residential)	50,935	38,505	32.3	44,723.4	37,944.7	17.9
Telephone Lines in Service (Mt. Bell)(nonresidential)	9,822	7,341	33.8	8,583.3	6,931.8	23.8
Salt Lake County						
Non-Ag. Employment (thous.)	347.5[f]	324.7	7.0	325.9	313.8	3.9
Unemployment Rate	5.6[r]	6.1	-8.2	6.0	6.2	-3.0
Auth. Permit Construction (thous. of dol.)	64,094.7	29,022.6	120.8	58,561.5	63,818.1	-8.2
New Dwelling Units (no.)	288	333	-13.5	538.4	950.4	-43.3
Postal Receipts[5] (thous. of dol.)	9,559.6	7,118.1	34.3	7,215.6	6,566.5	9.9
Electric Customers (residential)	230,035	219,630	4.7	na	216,205.4	na
Electric Customers (commercial)	18,957	18,218	4.1	na	17,941.4	na
Natural Gas Customers (residential)	210,784	202,728	4.0	205,279.4	198,688.3	3.3
Natural Gas Customers (industrial)	260	236	10.2	256.5	237.9	7.8
Telephone Lines in Service (Mt. Bell)(residential)	220,364	214,495	2.7	217,006.0	211,980.5	2.4
Telephone Lines in Service (Mt. Bell)(nonresidential)	107,087	108,146	-1.0	107,704.2	107,301.8	0.4
Utah County						
Non-Ag. Employment (thous.)	51.9[f]	50.5	2.8	51.2	49.0	4.5
Unemployment Rate	3.7[r]	4.2	-11.9	4.1	4.7	-13.0
Auth. Permit Construction (thous. of dol.)	6,047.8	4,495.7	34.5	13,942.5	11,689.3	19.3
New Dwelling Units (no.)	70	48	45.8	187.1	185.5	0.9
Postal Receipts[5] (thous. of dol.)	356.4	460.7	-22.6	316.3	330.4	-4.3
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Telephone Lines in Service (Mt. Bell)(residential)	50,935	38,505	32.3	44,723.4	37,944.7	17.9
Telephone Lines in Service (Mt. Bell)(nonresidential)	9,822	7,341	33.8	8,583.3	6,931.8	23.8
Weber County						
Non-Ag. Employment (thous.)	332.6[f]	324.7	2.4	324.7	313.8	3.5
Unemployment Rate	5.6[r]	6.1	-8.2	6.0	6.2	-3.0
Auth. Permit Construction (thous. of dol.)	64,094.7	29,022.6	120.8	58,561.5	63,818.1	-8.2
New Dwelling Units (no.)	288	333	-13.5	538.4	950.4	-43.3
Postal Receipts[5] (thous. of dol.)	9,559.6	7,118.1	34.3	7,215.6	6,566.5	9.9
Electric Customers (residential)	230,035	219,630	4.7	na	216,205.4	na
Electric Customers (commercial)	18,957	18,218	4.1	na	17,941.4	na
Natural Gas Customers (residential)	210,784	202,728	4.0	205,279.4	198,688.3	3.3
Natural Gas Customers (industrial)	260	236	10.2	256.5	237.9	7.8
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Telephone Lines in Service (Mt. Bell)(nonresidential)	107,087	108,146	-1.0	107,704.2	107,301.8	0.4

Sources:
Personal Income: Bureau of Economic Analysis, U.S. Department of Commerce
New Corporations: Utah Secretary of State
New Cars and Truck Sales: Utah State Tax Commission, Economic and Statistical Unit
Agriculture: U.S. Department of Agriculture, Agriculture, Utah: Utah Crop and Livestock Reporting Service (U.S. Department of Agriculture)
Construction Data: F.W. Dodge and Utah Construction Report
Employment Data: Utah Department of Employment Security
Savings, Savings and Loan Associations: Utah Savings and Loan Institutions
Tax Collections: Utah State Tax Commission
Net Electric Power Utilized: Cooperating Utah power companies
Crude Oil: Area oil refineries
Natural Gas: Utah Division of Oil, Gas, and Mining
Coal: Department of Energy
Air Passengers: Salt Lake International Airport, Statistics Service
Highway Traffic Count: Utah Department of Transportation, Travel Analysis Unit
Visits to State and National Parks and Monuments: U.S. Forest Service, Utah State Parks and Recreation Department
Utilities Data: Cooperating Utah utility companies
Postal Receipts: Postmasters in Davis, Salt Lake, Utah, and Weber Counties

r - revised
f - final
na - not available

Footnotes:
[1] Obtained from F.W. Dodge Statistics
[2] Obtained from Utah Construction Report
[3] Includes services by nonprofit and religious institutions
[4] Includes public schools and colleges institutions
[5] Postal receipts are reported every four weeks. Sales report for one month during each year includes total sales of two four-week periods. In 1985, this double-reporting occurred in the month of August.
[6] Cattle slaughtered statistics were reported incorrectly for the months July through November 1985. Twelve-month averages reflect corrections.

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NATIONAL DATA

	Dec. 1985	Dec. 1984	% Change From Year Ago	12 Month Average 1985	1984	% Chg.
U.S. Gross National Product[1] (seasonally adjusted)(bil.)(qtly.)	4,061.5	3,852.5	5.4	3,989.1	3,774.7	5.7
Total Personal Income[1] (seasonally adjusted)(bil. of dol.)	3,385.5	3,207.4	5.6	3,293.4	3,111.9	5.8
Industrial Production Indexes (seasonally adjusted)(1977=100)	126.3	123.3	2.4	124.5	121.8	2.2
Total Bus. Expend. for New Plants & Equip. (bil.)(qtly.)	389.0	367.2	5.9	384.4	353.5	8.7
Index of Leading Indicators (1967=100)	174.0	164.1	6.0	169.1	165.7	2.0
Price Indexes						
Consumer Price Indexes (not seasonally adjusted)(1967=100):						
CPI-U (All Urban Consumers) All Items	327.4	315.5	3.8	322.2	311.1	3.5
CPI-U (All Urban Consumers) Food & Beverages	305.6	297.2	2.8	302.0	295.1	2.3
CPI-U (All Urban Consumers) Housing	355.8	341.2	4.3	349.9	336.5	4.0
CPI-U (All Urban Consumers) Transportation	324.0	315.8	2.6	319.9	311.7	2.6
CPI-U (All Urban Consumers) Medical Care	414.7	388.5	6.7	403.1	379.5	6.2
CPI-U (All Urban Consumers) Energy	426.5	418.9	1.8	426.5	423.6	0.7
Producer Price Index (not seasonally adjusted)(1967=100):						
Producer Price Index, All Finished Goods	297.2	292.0	1.8	293.8	291.1	0.9
GNP Price Deflator[1] (1982=100)(qtly.)	113.0	109.6	3.1	111.7	108.1	3.3
Employment (seasonally adjusted):						
Civilian Labor Force (mil.)	108.2	106.2	1.9	107.2	105.0	2.1
Total Employed Persons (mil.)	116.2	114.5	1.5	115.5	113.5	1.7
Unemployment Rate	6.9	7.2	-4.2	7.2	16.4	-56.0
Construction:						
Total Construction (mil. of dol.)	15,166.0	14,220.4	6.6	18,631.6	17,611.4	5.8
Residential	6,976.2	5,955.8	17.1	8,674.4	8,464.1	2.5
Nonresidential	5,308.2	5,630.6	-5.7	6,579.9	6,153.3	6.9
Non-Building	2,881.6	2,634.0	9.4	3,377.4	2,994.0	12.8
New Dwelling Units (no.)	115,465	102,156	13.0	142,219.0	147,210.6	-3.4
Interest Rates:						
Short Term (3-month Treasury Bill rate)	7.07	8.16	-13.4	7.5	9.6	-21.8
Long Term (30-year Treasury Bond yields)	9.60	11.21	-14.4	10.8	12.0	-10.3
Prime Rates Charged by Banks on Short-term Business Loans (ave.)	9.50	11.06	-14.1	9 9	12.0	-17.5
Mortgage Rates (new homes)	10.39	12.05	-13.8	11.1	11.9	-6.4

[p]Preliminary [r]Revised na - Not available [a]Anticipated [ra]Revised Anticipated

Sources:

Business Conditions Digest, U.S. Department of Commerce: U.S. Gross National Product, Total National Personal Income, Industrial Production Indexes, Total Business Expenditures for New Plant and Equipment, Index of Leading Indicators, GNP Price Deflator, National Employment Data, Interest Rates.

F. W. Dodge Report, McGraw-Hill: National Construction Data.

Survey of Current Business, U.S. Department of Commerce: New Home Mortgage Rates.

Utah Labor Market Report, Utah Department of Employment Security: Consumer Price Indexes, Producer Price Indexes (data from Bureau of Labor Statistics).

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